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RAW SEQUENCE LISTING

DATE: 10/08/2002

PATENT APPLICATION: US/09/925,576C

TIME: 14:01:07

Input Set : A:\10004.ST25.txt

Output Set: N:\CRF4\10082002\I925576C.raw

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3 <110> APPLICANT: Andersen, Carsten
4      Borchert, Torben Vedel
5      Nielsen, Bjarne Ronfeldt
7 <120> TITLE OF INVENTION: Amylase Variants
9 <130> FILE REFERENCE: 10004.204-US
C--> 11 <140> CURRENT APPLICATION NUMBER: US/09/925,576C
C--> 11 <141> CURRENT FILING DATE: 2001-08-09
11 <160> NUMBER OF SEQ ID NOS: 20
13 <170> SOFTWARE: PatentIn version 3.1
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18 <213> ORGANISM: Bacillus sp.
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22 <222> LOCATION: (1)..(1455)
23 <223> OTHER INFORMATION: SP690
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31 ttg cca aat gac ggg aat cat tgg aac agg ttg agg gat gac gca gct      96
32 Leu Pro Asn Asp Gly Asn His Trp Asn Arg Leu Arg Asp Asp Ala Ala
33          20          25          30
35 aac tta aag agt aaa ggg ata aca gct gta tgg atc cca cct gca tgg      144
36 Asn Leu Lys Ser Lys Gly Ile Thr Ala Val Trp Ile Pro Pro Ala Trp
37          35          40          45
39 aag ggg act tcc cag aat gat gta ggt tat gga gcc tat gat tta tat      192
40 Lys Gly Thr Ser Gln Asn Asp Val Gly Tyr Gly Ala Tyr Asp Leu Tyr
41          50          55          60
43 gat ctt gga gag ttt aac cag aag ggg acg gtt cgt aca aaa tat gga      240
44 Asp Leu Gly Glu Phe Asn Gln Lys Gly Thr Val Arg Thr Lys Tyr Gly
45 65          70          75          80
47 aca cgc aac cag cta cag gct gcg gtg acc tct tta aaa aat aac ggc      288
48 Thr Arg Asn Gln Leu Gln Ala Ala Val Thr Ser Leu Lys Asn Asn Gly
49          85          90          95
51 att cag gta tat ggt gat gtc gtc atg aat cat aaa ggt gga gca gat      336
52 Ile Gln Val Tyr Gly Asp Val Val Met Asn His Lys Gly Gly Ala Asp
53          100          105          110
55 ggt acg gaa att gta aat gcg gta gaa gtg aat cgg agc aac cga aac      384
56 Gly Thr Glu Ile Val Asn Ala Val Glu Val Asn Arg Ser Asn Arg Asn
57          115          120          125
59 cag gaa acc tca gga gag tat gca ata gaa gcg tgg aca aag ttt gat      432

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64	Phe	Pro	Gly	Arg	Gly	Asn	Asn	His	Ser	Ser	Phe	Lys	Trp	Arg	Trp	Tyr	
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67	cat	ttt	gat	ggg	aca	gat	tgg	gat	cag	tca	cgc	cag	ctt	caa	aac	aaa	528
68	His	Phe	Asp	Gly	Thr	Asp	Trp	Asp	Gln	Ser	Arg	Gln	Leu	Gln	Asn	Lys	
69					165					170					175		
71	ata	tat	aaa	ttc	agg	gga	aca	ggc	aag	gcc	tgg	gac	tgg	gaa	gtc	gat	576
72	Ile	Tyr	Lys	Phe	Arg	Gly	Thr	Gly	Lys	Ala	Trp	Asp	Trp	Glu	Val	Asp	
73				180					185					190			
75	aca	gag	aat	ggc	aac	tat	gac	tat	ctt	atg	tat	gca	gac	gtg	gat	atg	624
76	Thr	Glu	Asn	Gly	Asn	Tyr	Asp	Tyr	Leu	Met	Tyr	Ala	Asp	Val	Asp	Met	
77			195				200					205					
79	gat	cac	cca	gaa	gta	ata	cat	gaa	ctt	aga	aac	tgg	gga	gtg	tgg	tat	672
80	Asp	His	Pro	Glu	Val	Ile	His	Glu	Leu	Arg	Asn	Trp	Gly	Val	Trp	Tyr	
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93			260				265					270					
95	ggt	gca	att	gaa	aac	tat	ttg	aat	aaa	aca	agt	tgg	aat	cac	tcg	gtg	864
96	Gly	Ala	Ile	Glu	Asn	Tyr	Leu	Asn	Lys	Thr	Ser	Trp	Asn	His	Ser	Val	
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104	Gly	Tyr	Tyr	Asp	Met	Arg	Asn	Ile	Leu	Asn	Gly	Ser	Val	Val	Gln	Lys	
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107	cat	cca	aca	cat	gcc	gtt	act	ttt	gtt	gat	aac	cat	gat	tct	cag	ccc	1008
108	His	Pro	Thr	His	Ala	Val	Thr	Phe	Val	Asp	Asn	His	Asp	Ser	Gln	Pro	
109				325					330				335				
111	ggg	gaa	gca	ttg	gaa	tcc	ttt	gtt	caa	caa	tgg	ttt	aaa	cca	ctt	gca	1056
112	Gly	Glu	Ala	Leu	Glu	Ser	Phe	Val	Gln	Trp	Phe	Lys	Pro	Leu	Ala		
113			340					345				350					
115	tat	gca	ttg	gtt	ctg	aca	agg	gaa	caa	ggt	tat	cct	tcc	gta	ttt	tat	1104
116	Tyr	Ala	Leu	Val	Leu	Thr	Arg	Glu	Gln	Gly	Tyr	Pro	Ser	Val	Phe	Tyr	
117		355					360				365						
119	ggg	gat	tac	tac	ggt	atc	cca	acc	cat	ggt	gtt	ccg	gct	atg	aaa	tct	1152
120	Gly	Asp	Tyr	Tyr	Gly	Ile	Pro	Thr	His	Gly	Val	Pro	Ala	Met	Lys	Ser	
121		370				375					380						
123	aaa	ata	gac	cct	ctt	ctg	cag	gca	cgt	caa	act	ttt	gcc	tat	ggt	acg	1200
124	Lys	Ile	Asp	Pro	Leu	Leu	Gln	Ala	Arg	Gln	Thr	Phe	Ala	Tyr	Gly	Thr	

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128 Gln His Asp Tyr Phe Asp His His Asp Ile Ile Gly Trp Thr Arg Glu
129          405          410          415
131 gga aat agc tcc cat cca aat tca ggc ctt gcc acc att atg tca gat      1296
132 Gly Asn Ser Ser His Pro Asn Ser Gly Leu Ala Thr Ile Met Ser Asp
133          420          425          430
135 ggt cca ggt ggt aac aaa tgg atg tat gtg ggg aaa aat aaa gcg gga      1344
136 Gly Pro Gly Gly Asn Lys Trp Met Tyr Val Gly Lys Asn Lys Ala Gly
137          435          440          445
139 caa gtt tgg aga gat att acc gga aat agg aca ggc acc gtc aca att      1392
140 Gln Val Trp Arg Asp Ile Thr Gly Asn Arg Thr Gly Thr Val Thr Ile
141          450          455          460
143 aat gca gac gga tgg ggt aat ttc tct gtt aat gga ggg tcc gtt tcg      1440
144 Asn Ala Asp Gly Trp Gly Asn Phe Ser Val Asn Gly Gly Ser Val Ser
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164          20          25          30
167 Asn Leu Lys Ser Lys Gly Ile Thr Ala Val Trp Ile Pro Pro Ala Trp
168          35          40          45
171 Lys Gly Thr Ser Gln Asn Asp Val Gly Tyr Gly Ala Tyr Asp Leu Tyr
172          50          55          60
175 Asp Leu Gly Glu Phe Asn Gln Lys Gly Thr Val Arg Thr Lys Tyr Gly
176 65          70          75          80
179 Thr Arg Asn Gln Leu Gln Ala Ala Val Thr Ser Leu Lys Asn Asn Gly
180          85          90          95
183 Ile Gln Val Tyr Gly Asp Val Val Met Asn His Lys Gly Gly Ala Asp
184          100          105          110
187 Gly Thr Glu Ile Val Asn Ala Val Glu Val Asn Arg Ser Asn Arg Asn
188          115          120          125
191 Gln Glu Thr Ser Gly Glu Tyr Ala Ile Glu Ala Trp Thr Lys Phe Asp
192          130          135          140
195 Phe Pro Gly Arg Gly Asn Asn His Ser Ser Phe Lys Trp Arg Trp Tyr
196 145          150          155          160
199 His Phe Asp Gly Thr Asp Trp Asp Gln Ser Arg Gln Leu Gln Asn Lys
200          165          170          175
203 Ile Tyr Lys Phe Arg Gly Thr Gly Lys Ala Trp Asp Trp Glu Val Asp
204          180          185          190
207 Thr Glu Asn Gly Asn Tyr Asp Tyr Leu Met Tyr Ala Asp Val Asp Met

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215 Thr Asn Thr Leu Asn Leu Asp Gly Phe Arg Ile Asp Ala Val Lys His
216 225          230          235          240
219 Ile Lys Tyr Ser Phe Thr Arg Asp Trp Leu Thr His Val Arg Asn Thr
220          245          250          255
223 Thr Gly Lys Pro Met Phe Ala Val Ala Glu Phe Trp Lys Asn Asp Leu
224          260          265          270
227 Gly Ala Ile Glu Asn Tyr Leu Asn Lys Thr Ser Trp Asn His Ser Val
228          275          280          285
231 Phe Asp Val Pro Leu His Tyr Asn Leu Tyr Asn Ala Ser Asn Ser Gly
232          290          295          300
235 Gly Tyr Tyr Asp Met Arg Asn Ile Leu Asn Gly Ser Val Val Gln Lys
236 305          310          315          320
239 His Pro Thr His Ala Val Thr Phe Val Asp Asn His Asp Ser Gln Pro
240          325          330          335
243 Gly Glu Ala Leu Glu Ser Phe Val Gln Gln Trp Phe Lys Pro Leu Ala
244          340          345          350
247 Tyr Ala Leu Val Leu Thr Arg Glu Gln Gly Tyr Pro Ser Val Phe Tyr
248          355          360          365
251 Gly Asp Tyr Tyr Gly Ile Pro Thr His Gly Val Pro Ala Met Lys Ser
252          370          375          380
255 Lys Ile Asp Pro Leu Leu Gln Ala Arg Gln Thr Phe Ala Tyr Gly Thr
256 385          390          395          400
259 Gln His Asp Tyr Phe Asp His His Asp Ile Ile Gly Trp Thr Arg Glu
260          405          410          415
263 Gly Asn Ser Ser His Pro Asn Ser Gly Leu Ala Thr Ile Met Ser Asp
264          420          425          430
267 Gly Pro Gly Gly Asn Lys Trp Met Tyr Val Gly Lys Asn Lys Ala Gly
268          435          440          445
271 Gln Val Trp Arg Asp Ile Thr Gly Asn Arg Thr Gly Thr Val Thr Ile
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297 1          5          10          15

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304	Asn	Leu	Arg	Asn	Arg	Gly	Ile	Thr	Ala	Ile	Trp	Ile	Pro	Pro	Ala	Trp	
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308	Lys	Gly	Thr	Ser	Gln	Asn	Asp	Val	Gly	Tyr	Gly	Ala	Tyr	Asp	Leu	Tyr	
309		50				55					60						
311	gat	tta	ggg	gaa	ttt	aat	caa	aag	ggg	acg	gtt	cgt	act	aag	tat	ggg	240
312	Asp	Leu	Gly	Glu	Phe	Asn	Gln	Lys	Gly	Thr	Val	Arg	Thr	Lys	Tyr	Gly	
313	65				70				75						80		
315	aca	cgt	agt	caa	ttg	gag	tct	gcc	atc	cat	gct	tta	aag	aat	aat	ggc	288
316	Thr	Arg	Ser	Gln	Leu	Glu	Ser	Ala	Ile	His	Ala	Leu	Lys	Asn	Asn	Gly	
317				85				90						95			
319	gtt	caa	gtt	tat	ggg	gat	gta	gtg	atg	aac	cat	aaa	gga	gga	gct	gat	336
320	Val	Gln	Val	Tyr	Gly	Asp	Val	Val	Met	Asn	His	Lys	Gly	Gly	Ala	Asp	
321			100					105					110				
323	gct	aca	gaa	aac	gtt	ctt	gct	gtc	gag	gtg	aat	cca	aat	aac	cgg	aat	384
324	Ala	Thr	Glu	Asn	Val	Leu	Ala	Val	Glu	Val	Asn	Pro	Asn	Asn	Arg	Asn	
325			115					120					125				
327	caa	gaa	ata	tct	ggg	gac	tac	aca	att	gag	gct	tgg	act	aag	ttt	gat	432
328	Gln	Glu	Ile	Ser	Gly	Asp	Tyr	Thr	Ile	Glu	Ala	Trp	Thr	Lys	Phe	Asp	
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332	Phe	Pro	Gly	Arg	Gly	Asn	Thr	Tyr	Ser	Asp	Phe	Lys	Trp	Arg	Trp	Tyr	
333	145				150					155					160		
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336	His	Phe	Asp	Gly	Val	Asp	Trp	Asp	Gln	Ser	Arg	Gln	Phe	Gln	Asn	Arg	
337				165				170						175			
339	atc	tac	aaa	ttc	cga	ggt	gat	ggt	aag	gca	tgg	gat	tgg	gaa	gta	gat	576
340	Ile	Tyr	Lys	Phe	Arg	Gly	Asp	Gly	Lys	Ala	Trp	Asp	Trp	Glu	Val	Asp	
341			180					185					190				
343	tcg	gaa	aat	gga	aat	tat	gat	tat	tta	atg	tat	gca	gat	gta	gat	atg	624
344	Ser	Glu	Asn	Gly	Asn	Tyr	Asp	Tyr	Leu	Met	Tyr	Ala	Asp	Val	Asp	Met	
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348	Asp	His	Pro	Glu	Val	Val	Asn	Glu	Leu	Arg	Arg	Trp	Gly	Glu	Trp	Tyr	
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352	Thr	Asn	Thr	Leu	Asn	Leu	Asp	Gly	Phe	Arg	Ile	Asp	Ala	Val	Lys	His	
353	225				230					235					240		
355	att	aaa	tat	agc	ttt	aca	cgt	gat	tgg	ttg	acc	cat	gta	aga	aac	gca	768
356	Ile	Lys	Tyr	Ser	Phe	Thr	Arg	Asp	Trp	Leu	Thr	His	Val	Arg	Asn	Ala	
357				245				250					255				
359	acg	gga	aaa	gaa	atg	ttt	gct	gtt	gct	gaa	ttt	tgg	aaa	aat	gat	tta	816
360	Thr	Gly	Lys	Glu	Met	Phe	Ala	Val	Ala	Glu	Phe	Trp	Lys	Asn	Asp	Leu	
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L:11 M:271 C: Current Filing Date differs, Replaced Current Filing Date